

CURRICULUM VITAE

NAME: Prof. George Muturi Thumbi
PRESENT EMPLOYER: The Technical University of Kenya
PRESENT POST: Professor

EDUCATIONAL BACKGROUND

1. Karatina Full Primary School - KPE 1961 – 1969
2. St. Joseph's Secondary School -EASCE 1970 – 1973
3. Ministry of Water Training School -June 1974 – Dec. 1974
4. Kenya Polytechnic -Ordinary Diploma 1975 – 1977
Water Engineering
5. Kenya Polytechnic -Higher Diploma 1980 – 1982
Structural Engineering
6. Osaka Sangyo University Japan -One year research 1985 – 1982
7. Osaka University of foreign studies Japan -Japanese Language April 1988 – Sept. 1988
8. Osaka Sangyo University Japan -Research October 1988 – March 1989
9. Osaka Sangyo University Japan -MSc. April 1989 – March 1991
Sanitary Engineering
Thesis Title: "The Anaerobic Fixed Bed Reactor for the Treatment of Diluted Wastes at Low temperature
10. Kyoto University Japan D. Engineering April 1991 – June 1994
Sanitary & Environmental Engineering
Dissertation title: Anaerobic Treatment of Wastewater at low Temperature

PUBLICATIONS

1. K. Kyu, **G. M. Thumbi**, October 1985 Biogas Transfer from Asia to Africa Water Pollution Research Control. Pages 160-167.

2. K.Kyu, **G. M. Thumbi**, 1986 Transfer of Pollution Control From Japan to Kenya (in Japanese), Kyoto University, Sanitary and Environmental Engineering, International Symposium, No. 8, pages 158-162.
3. **G. M. Thumbi**, 1986, View of Sewage Treatment works in Kenya, Kyoto University, Sanitary and Environmental Engineering, International Symposium No. 8 pages 150 – 157.
4. **G. M. Thumbi**, 1986, Treatment of Cafeteria Wastewater by a New Developed Bioreactor, International Symposium on Environment and Management for Developing Countries volume 3, pages 1 – 19.
5. **G. M. Thumbi**, July/August 1990, Performance Evaluation of Laboratory Batch Reactor, Water Pollution Research and Control, Kyoto, pages 359-362
6. **G. M. Thumbi**, 1994, Biosorption of Hazardous Substances and the effect in Anaerobic Reactor: The Evaluation of Chlorinated phenolic Compounds, 17th Biennial International Association on Water Quality (L.A. W.Q)
7. **G. M. Thumbi**, H. Ozaki and Y. Terashima, 1984, Effect of Decreasing Low Temperature on Fixed Bed Filter. Japan Society on Water Environment (in Japanese) No. 28, pages 324-325
8. **G. M. Thumbi**, Nov. 1996 Effect of Temperature on Primary Substances Removal, Journal of Civil Engineering, JKUAT, volume 1, ISSN 1562-6121 pages 8-13
9. **G.M. Thumbi**, Nov. 1996, Effect of Temperature on Anaerobic digestion, Journal of Civil Engineering, JKUAT, Volume II, ISSN 1562-6121 pages 89-94
10. **G. M. Thumbi**, H. Ozaki and Y. Terashima, Nov 1996, Biosorption of chlorinated phenolic compounds and the effect in anaerobic reactor, Journal of Civil Engineering, JKUAT, Volume II ISSN 1562-6121 pages 95-105.
11. **G. M. Thumbi**, January 1999, Operation of ponds in Kenya: Case study of Isiolo sewerage Treatment works, Journal of Civil Engineering, JKUAT, Volume IV, ISSN 1562-6121 pages 92-98.
12. **G. M. Thumbi**, January 1999, Temperature effect on Primary substrate degradation and removal, Journal of Civil Engineering, Volume IV, ISSN 1562-6121 pages 99-106.
13. **G. M. Thumbi**, October 1998, Effect of pH on degradation primary substrate, East African Journal of Engineering, volume 3, No. 1, ISSN 0856-499X pages 15-18.
14. **G. M. Thumbi**, October 1998 Up flow anaerobic filter kinetics model, East African Journal of Engineering, Volume 3 No. 1, ISSN 0856 – 499X pages 37 – 41.

15. **G. M. Thumbi**, March 2000, Operation of both trickling filter systems and Ponds in Kenya. Case study of Kisumu Municipality Sewerage Treatment Works, Journal of Civil Engineering. JKUAT, volume 5 ISSN 1562-6121 pages 23-29.
16. F.N. Sira, **G. M. Thumbi**, H.M. Bwuisa, L.A. Oyugi, June 2001, Sustainable management of domestic and solid wastes in developing countries journal of Civil Engineering, JKUAT, volume 6, ISSN 1562-6121 pages 13-26.
17. P.M. Kibetu, **G.M. Thumbi**, A.W. Mayo, 2001, Pilot Scale Comparative studies on the variability of sewage Treatment Performance for a sub-surface Flow Constructed wetland in Kenya, Proceedings of the international Civil Engineering Conference on sustainable Development in the 21st century Nairobi, Kenya Pages 349-355.
18. Njenga Mburu, **G.M. Thumbi** and A.O. Mayabi, April 2005, Removal of Organic Matter from Domestic Wastewater in a Tropical Subsurface Horizontal Flow Constructed Wetlands, Journal of Civil Engineering Research and Practice, Volume 2 No. 1. pages 39-52.
19. P. W. Murage, **G. M. Thumbi**, D. K. Tuitoek and Saenyi W.W., July 2007, Improvement of WSP effluent quality for re-use using intermittent slow sand filter- The Egerton WSP Pilot, Study Journal of Civil engineering Research and Practice pp 55-63.
20. B.K. Daudi, **G.M. Thumbi**, M.Gachanja Dec 2008. Evaluation of Pesticide Removal from Waste Water Using Activated Sawdust Carbon. Proceedings of the 2nd international civil engineering and sustainable development page 465-477
21. **G.M. Thumbi**, J.W. Njenga, J.K. Mungathia, Dec.2008. Removal of Heavy metal from Industrial Wastewater Using Washed Quarry Dust. . Proceedings of the 2nd international civil engineering and sustainable development page 503-513
22. G.M. Mwangi, **G.M. Thumbi**, P.M. Kibetu. April 2008 Removal of Algae in Stabilization Ponds Effluent Using Moringa Oeifera Coagulant. Journal of Civil Engineering Research and Practice, Volume 8 No. 1. pages 53-61
23. Njenga Mburu, **G.M.Thumbi**, A.O. Mayabi. July 2008 Removal of Coliform and Solids in a Tropical Constructed Wetland. International Journal for Disaster Management & Risk Reduction. Vol.1 No. 2, pp X-Y ISSN; 1992-2744.
24. Mungathia J.K., **Thumbi G.M.**, Njenga J.W. the Benchmark The official magazine of the Kenya Bureau of Standards Issue 2 09 Removal of heavy metals using quarry dust adsorption column. page 32
25. **G.M. Thumbi**, S.M. Waweru, April 2011 Horizontal Subsurface Flow Constructed Wetland Performance Evaluation Using First-Order Kinetics International Journal for Disaster Management & Risk Reduction. Vol.3Issue, pp 116-127 ISSN; 1992-2744.
26. **G.M. Thumbi**, F.K. Kirui, M.O. Nyandawa, April 2011 Distribution of Organochlorine Pesticides in Lake Naivasha, Kenya. International Journal for Disaster Management & Risk Reduction. Vol.3 Issue 3, pp 149-155 ISSN; 1992-2744.

27. Njenga Mburu, David Sanchez-Ramos, Diederik P.L. Rousseau, Johan J.A. van Bruggen, **George Thumbi**, Otto R. Stein, Paul B. Hook, Piet N.L. Lens. **May 2012** Simulation of carbon, nitrogen and sulphur conversion in batch-operated experimental wetland mesocosms. *Ecological Engineering, The Journal of Ecosystem Restoration*. Volume 42, pp 304-315 ISSN 0925-8574.
28. Mungathia, J.K, **Thumbi, G.M**, and Waweru, S.G. Removal of Heavy Metals from Industrial Wastewater Using Washed Quarry Dust (WQD). *Journal of Science Technology Education and Management* Vol. 5 Nos 1&2, September 2012, ISSN 1991-2889 pp. 38-52.
29. N. Mburu, D.P.L. Rousseau, J.J.A. van Bruggen, **G. Thumbi**, E. Llorens, J. García, P.N.L.Lens Reactive transport simulation in a tropical horizontal subsurface flow constructed wetland treating domestic wastewater. *The journal of Science of the Total Environment* 449(2013) pp 309-319.
30. Mungathia, J.K, **Thumbi, G.M**, and Mwangi, J.K. Extended Langmuir Model Fitting to the Filter Column Data of Heavy Metals. *Journal of Agriculture Science and Technology* Volume 15 Number 1, 2013 pp 192-218
31. Ogola W.O, **Thumbi G.M**, Ondieki C.M.M, Nyagowa H, Akumu C.T. Re-Orienting Engineering Professional Bodies Towards Industrialization for Sustainable Development (SD) in Kenya. *The Kenya Journal of Technical and Vocational Education and Training*. Vol.2 (2014) pp 15-25.
32. Stanley K. Nganga, Purity M. Kibetu, **Thumbi G.M**, Okwadha, Nyandawa M.O. Groundwater Mapping of Makueni County, Eastern Kenya Using Remote Sensing and Geographical Information System (GIS) Technologies. *Journal of International Academic Research for Multidisciplinary (JIARM)*. Vol. 3, Issue 8, September 2015. Pp 266-277. ISSN 2320-5083.
33. Stanley K. Nganga, Purity M. Kibetu, **Thumbi G.M**, Okwadha, Nyandawa M.O. Reduction of Iron and Manganese in Groundwater through Non-mechanical Aeration and Filtration Method: Case Study of Makueni County, Eastern Kenya. *Journal of International Academic Research for Multidisciplinary (JIARM)*. Vol. 5, Issue 06, July 2017. Pp 25-37. ISSN 2320-5083.
34. Stanley K. Nganga, Purity M. Kibetu, **Thumbi G.M**, Okwadha, Nyandawa M.O. Groundwater Quality Assessment and Water Quality Indexing: Case Study of Makueni County, Eastern Kenya. *JKUAT Scientific Conference 23rd ---24th November 2017*.
35. Stanley K. Nganga, Purity M. Kibetu, **Thumbi G.M**, Okwadha, Nyandawa M.O. Groundwater Quality Assessment and Water Quality Indexing: Case Study of Makueni County, Eastern Kenya. *Journal of International Academic Research for Multidisciplinary (JIARM)*. Vol. 6, Issue 2, March 2018. Pp 77-91 ISSN 2320-5083.
36. M.A. Mutoro, G.M. Thumbi. To Investigate the Efficacy of Solar Radiation Disinfection of Shallow Well Water Contaminated with Suspended Solids. *Journal of International Academic Research for*

EXPERIENCE

- Inspector of Water Supply Construction at Ministry of Water Development 1974-1979
- Writing Feasibility Reports of Water Supply at Ministry of Water, Planning Section. 1980-1981.
- Instructor at Ministry of Water development Training School from 1981 – 1983. Subjects taught were; Water and Wastewater Treatment, Hydraulics, Hydrology. – Prepared Water and Wastewater Laboratory.
- Joined JKUAT under TSC on January 1984 to August 1990. Subjects taught were; Public Health Engineering, Hydraulics, Hydrology, Structures. I was a course tutor for Irrigation Engineering Course.
- Member of the committee preparing curriculum on water Engineering Diploma for Kenya Institute of Education (KIE), 1987.
- Transferred to JKUAT from TSC in August 1991 to March 2010. Subjects taught were Public Health Engineering, Sanitation and Waste Control.
- Part-time Lecturer at Moi University in 1995/96 and 1998/99 academic year for the Bachelor of Technology and Master of Philosophy classes respectively.
- Assistant Lecturer from 14th August 1991 to August 1994
- Lecturer from 25th August 1994 to September 1996
- Senior Lecturer, 23rd September 1996 to 28th February 2010.
- Joined Kenya Polytechnic University College from 1st March 2010 as an Associate Professor in the department of Civil and Environmental Engineering to 11th December 2014.
- Promoted to Professor of Civil Engineering Technology from 11th December 2014 to date.
- Part-time JKUAT from July 2015 to 2016

POSTGRADUATE STUDENT SUPERVISION

Supervisor to the following Ph.D students:

1. Mr. A.O. Mayabi, JKUAT, title: Treatment of Coffee Waste using Anaerobic Ponds (Ph.D completed in April 1999)
2. Mr. Njenga Mburu, UNESCO-IHE, Delft Title: experimental and modeling studies of horizontal subsurface flow constructed wetlands treating domestic wastewater (Ph.D. completed in November 2013)

Supervisor to the following MSc. Students:

1. Mr. Philip W. Murage, Egerton University, Title: Performance and Process design evaluation of waste stabilization ponds to treat wastewater for irrigation purpose (completed in 2003)
2. Ms. Muli W. Teresa, JKUAT, Title: Windrow composting for Municipal Solid waste (completed in 2004)
3. Mr. Njenga Mburu, JKUAT, Title: Performance Evaluation of a subsurface Horizontal flow constructed wetland in the tropic (completed in 2004)
4. Mr. Fredrick K. Kirui, JKUAT, Title: Development of Water Quality monitoring and Management model for Lake Naivasha (completed in 2006)
5. Mr. George Mwaura Mwangi, JKUAT, Title: Removal of Algae in stabilization pond effluent using natural coagulant (completed in 2007)
6. Mr. John Kibunei Taragon, JKUAT. Title: Potential groundwater contaminated by nitrate – nitrogen as influenced by irrigation and fertilizer application rates (completed in 2007)
7. Ms. Beatrice K. Daudi, JKUAT. Title; Evaluation of Pesticides Removal from Agricultural Wastewater Using Sawdust Carbon. (completed in 2009)
8. Mr. Mungathia Kalionci Julius, JKUAT. Title: Use of Washed Quarry Dust in the Treatment of Industrial Effluents; Case Study of Electroplating Industry. (completed in 2009)

RESEARCH UNDERTAKEN:

1. Treatment of waste from coffee industry using locally available materials Phase 1 1985/96 to evaluate the effect of media size and intermittent flow on start-up.
2. Treatment of waste from coffee industry using locally available materials. Phase II 1996/97.
3. Effect of hydraulic retention time on organic removal from coffee wastewater treated using fixed-bed filter. 1996
4. Assessing the Nitrogen and Phosphorus level in Ground water in Juja Location 1997/98
5. Study and design of Nyeri water treatment plant 1998
6. Evaluation of wastewater for unplanned reuse: Case study of Nairobi city 1999
7. Solid waste management and recycling methods: Case study of Thika Municipality 2000
8. Sitting of Pit latrines in relation to shallow wells: Case study of Gachororo township in Juja town 2000
9. Analysis of pesticides residues in water sources around Juja of Thika District – 2000

10. Development of Water Quality Monitoring and Management model (Nutrients) for Lake Naivasha Phase I 2004/2005 (funded by AICAD)
11. Development of Water Quality Monitoring and Management model (pesticides) for lake Naivasha Phase II 2006/2007 (funded by AICAD)
12. The empirical design model for COD using a pilot scale subsurface flow constructed wetland performance in treating domestic waste. 2010

OTHER RESPONSIBILITIES

1. Final year (5th) Project Coordinator (1994-1999)
2. Class Tutor of 5th year students
3. Founder member of Journal of Civil Engineering, JKUAT (1994)
4. Editor in Chief of Journal of Civil Engineering, JKUAT (1994-2001)
5. Editorial board member of journal of Civil engineering, JKUAT
6. Course Leader for the preparation of the curriculum for Third Country course in Water Pollution and its Analysis
7. Acting Chairman of Department September/October 1997
8. Resource person for Third Country Course in Water Pollution and its Analysis 1997 – 2001
9. Resource Person for Water Pollution Course of Lake Victoria Environmental Management programme in February 1999
10. Committee member of Kenya Bureau of Standards on Sanitary Technical Committee
11. A reviewer for the journal of Agriculture, Science and Technology (JAST) based at JKUAT
12. Team Leader for follow-up team of Third Country participants in Malawi and Tanzania (April 1999)
13. Committee member and Technical advisor for Gatamaiyu School of mentally handicapped children
14. External Examiner for MSc. Thesis titled; Development and Trial of a Low Cost Aerobic grey water Treatment system (undertaken at University of Western Sydney Australia)
15. Resource person for water & wastewater courses taken at AICAD
16. Panelist for AICAD research proposals (December 2003 and July 2004)

17. Editorial Board member of Journal of Civil Engineering Research and Practice
18. Committee member of Laboratories Accreditation Task Force under National Environment Management Authority (NEMA). (From 2002 to 2010.)
19. External Examiner for M.PHIL. Thesis Title. Domestic Water Defluoridation Using Natural Materials; A case study of Excess Fluoride occurrence, its Effects and Mitigation Measures in West Karachuonyo Division, Rachuonyo District, Kenya. (from Moi University) January 2009.
20. External Examiner for M.PHIL. Thesis Title: Performance of Natural Wetlands in Domestic Wastewater Treatment: A case study of Moi University. (from Moi University) November 2010.
21. External Examiner for Chepekoilel University College from 2011 to 2013.
22. Board Member for Gatamaiyu Home for mentally challenged children from 2010 for a period of three years this was renewed for another period of three years.
23. Director of International Programmes and Links at Kenya Polytechnic University College from April 2011 for a period of three years up to April 2014.
24. Acting Head of School, School of Engineering Science and Technology at Technical University of Kenya from August 2012 to March 2013.
25. Director of school, school of infrastructure and resource engineering from July 2015 for a period of three years.
26. External Examiner for PhD thesis titled; Hydraulic Performance of Horizontal Subsurface Flow Constructed Wetland System in Treatment of Greywater; The case of Peri-Urban Areas in Nakuru Municipality, Kenya. (from Egerton University) February 2013
27. External Examiner for M.sc. thesis titled; Optimization of Energy Recovery from Domestic Animal Waste. From Tshwane University of Technology, South Africa. March 2013
28. External Examiner for M.PHIL. thesis titled: An Occupational Safety and Health Preparedness in Wood Workshops of Selected Technical and Vocational Institutions in Western Kenya. From Moi University April 2013.
29. External Examiner for M.sc. thesis titled; Hydrological Modeling for Adequacy of an Existing Spillway. From Moi University October 2013
30. External Examiner for M.sc. thesis titled; Hydraulic Design to Optimize Treatment Capacity of Multi-stage Filtration Units. From Moi University September 2014

31. External Examiner for M.Tech. thesis titled: A holistic stormwater management system using a multi-criteria approach. . From Tshwane University of Technology, South Africa. 2014
32. Council member of the Technical and Vocational Education and Training Curriculum Development Assessment and Certification Council (TVET CDACC). This in accordance to Article 44 (1) of the Technical and Vocational Education and Training (TVET) Act No.29 of 2013.
33. External Examiner for University of Eldoret department of education technology from 2013 to 2017.
34. External Examiner for Moi University department of civil and structural engineering from 2015 to 2018.
35. External Examiner for Msc thesis titled; An Investigation of Safety Measures on Construction Sites in Kenya. University of Eldoret.
36. External Examiner for PhD. Thesis titled; Road Safety----from Masinde Muliro University of Science and Technology. 2015.
37. External Examiner for PhD. Thesis titled; Automotive Technology Teacher Training Curriculum in University of Eldoret, Kenya: Relevance to Job Market. University of Eldoret 2016
38. External Examiner for Master of Technology Education (MED) thesis titled; Challenges facing the entry of automotive graduates of technical institutions into self-employment: The Case of North Rift Region. University of Eldoret 2016
39. External Examiner for PhD. Thesis titled; Factors Leading to Structural Failure of the Flexible Pavement along Timboroa – Malaba class ‘A’ Road in Kenya. Masinde Muliro University of Science and Technology. 2016.
40. External Examiner for Master of Technology Education (MED) thesis titled; A Study of the Extent of Building Renewal in Commercial Building in Selected major Towns in Kenya. University of Eldoret 2016
41. External Examiner for Master of Technology Education (MED) thesis titled; Housing Accessibility: A Study of Retrofitting Efficient Ramps in Public Building in Kisumu City Kenya. University of Eldoret 2016
42. External Examiner for Master of Education (Technology Education) thesis titled: Career choice selection in Information Technology by students in Technical Vocational Education and Training (TVET) Institutions in Western Kenya. University of Eldoret 2016

43. Board Governance Induction Training course at Kenya School of Monetary Studies from 8th November to 10th November 2017
44. External Examiner for D.Tech thesis titled: Modeling groundwater flow under recharge uncertainty: An application to central Limpopo. From Tshwane University of Technology, South Africa. August 2017
45. Five –day Corporate Governance Training Course for Directors at Sarova Whitesands beach Resort, Mombasa, Kenya 23rd April to 27th April 2018.
46. Induction on Competent Based Education and Training (CBET) at TESDA in Philippines 21st May to 27th May 2018
47. External Examiner for M.sc thesis titled: Simulation of (rainfall surface) runoff-water quality effects on (surface water bodies) treatment works in mid-block of Yala. Masinde Muliro University of Science and Technology. October 2019.
48. External Examiner for Master of Engineering: Civil Engineering thesis titled: Estimation of groundwater Recharge using GIS tools: A case study of Makotopong Village-Polokwane. December 2019
49. Bench marking at Malaysia
50. Bench-marking at Canada, Toronto (19th to 22nd November) on regulation, registration and training of technologists and technicians. Places visited: 1) The Ontario Association of Certified Technicians and Technologists OACETT) 2) Humber college---training on technology courses. 3) Seneca college—training on technology courses.

CONFERENCE ATTENDED/PRESENTED

1. International Association of Water Pollution Research and Control, First Asian Conference, Tokyo, Japan 1 – 3 October, 1985
2. Water Pollution Research and Control, Kyoto, Japan, July 29th – August 3rd 1990
3. Kyoto University Sanitary and Environmental Engineering, International Symposium, Japan, July 24-25, 1986
4. Japan Society on Water Environment Conference in Japan, March 16th – 18th 1994
5. Water in East Africa French Technologies, Conference in Nairobi, October 17th – 19th 1995
6. Workshop on solid Waste Management for Nairobi City 9th Dec. 1997

7. International Civil engineering Conference on Sustainable Development in the 21st Century, Nairobi, Kenya 12th – 16th August 2003.
8. Workshop on effective Teaching/Instructional Methods in Engineering, 3/8/06 and 4/8/06
9. Symposium on Civil Engineering in Sustainable Infrastructure Development at JKUAT on 8th January 2007
10. JKUAT Scientific Conference 23rd --24th November 2017

CONSULTANCY (IGAs)

10. Environmental impact assessment “Evaluation of Isiolo and Meru Sewerage works funded by JICA 1996/97”.
11. Environmental impact assessment “Kisumu Water Supply and Sewerage system in the Republic of Kenya (Phase 1). September, 1997. Funded by JICA”
12. Environmental impact assessment “Solid Waste management for Nairobi City, November, 1997. Funded by JICA”
13. The Aftercare study on the National Water Master Plan in the Republic of Kenya. February, 1998. Funded by JICA
14. Environmental impact assessment “Kisumu Water Supply and Sewerage system in the Republic of Kenya (Phase II). March, 1998. Funded by JICA
15. Environmental impact assessment “Feasibility study of roads in Western Kenya; water quality analysis-Norconsult Consulting Engineers
16. Study on Water Quality Analysis for the basic design in Meru Water Supply in the republic of Kenya May, 2002. Nippon Koei Consulting Engineers
17. Local survey for special assistance for project sustainability (SAPSI) on greater Nakuru water supply project July/August 2001, Mangat I.B. Patel and Partners, Funded by JICA
18. Local Survey for special assistance for project sustainability (SAPs II) on greater Nakuru water supply project March/April 2002, Mangat I.B. Patel and Partners Funded by JICA
19. Supervision of Science Complex Sewerage works construction at JKUAT 2004

REGISTRATION

LEAD EXPERT as an Environmental Impact Assessment/Audit Expert. This is under the Environmental Management and Coordination Act of Kenya (EMCA).

Fellow member. Institute of Engineering Technologists and Technicians (IET)

Chairman. Institute of Engineering Technologists and Technicians (IET). From 2010 to date.

Chairman of the technical team preparing the Kenya Engineering Technologists and Technician Board (KETT) act. 2011 to 2016 November

Board member of Kenya Engineering Technology Registration Board (KETRB) appointed from 24th October 2016 to 23rd October 2019.

Acting chairman of the Kenya Engineering Technology Registration Board (KETRB) from January 2018 to 23rd October 2019

Referees

- 1) Prof. Moses K. Gachari
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Dedan Kimathi University of Technology
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- 2) Prof. C.G. Nyaga. JKUAT, Department of Chemistry
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- 3) Prof. G.M. Kenji. JKUAT. Department of Food Science
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